

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the pending application. The final Office Action dated August 30, 2006, has been received and its contents carefully reviewed.

Claims 1-3, 5-12, 14-32, and 34-47 are rejected by the Examiner. Claims 9, 18, 19, 30, and 35 have been amended. No new matter has been added. Claims 1-3, 5-12, 14-32, and 34-47 remain pending in this application.

In the Office Action, claims 1-3, 5-8, 30 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2002/0030652 to Cairns et al. (hereinafter “‘652”) in view of U.S. Patent No. 6,268,841 to Cairns et al. (hereinafter “‘841”). Claims 9-12, 14-29, 32, and 34-47 are rejected under 35 U.S.C. § 103(a) as being unpatentable over ‘652 in view of ‘841 and U.S. Patent No. 6,667,402 to Nitta et al. (hereinafter “Nitta”).

The rejection of claims 1-3, 5-8, 30, and 31 under 35 U.S.C. § 103(a) as being unpatentable over ‘652 in view of ‘841 is respectfully traversed and reconsideration is requested.

Claims 1-3 and 5-8 each recites a data driving apparatus for a liquid crystal display device having a combination of features including “an output part sampling and holding first received analog pixel signals from the demultiplexer part and holding second received analog pixel signals and simultaneously outputting both first and second received pixel signals to corresponding data lines, wherein the output part comprises ... a third multiplexer part simultaneously discharging the pixel signals held in the capacitors to the corresponding data lines through the output buffer part.”

In rejecting claims 1-3 and 5-8, the Examiner acknowledges that ‘652 and ‘841 do not teach “a third multiplexer part.” The Examiner takes Official Notice that it would be obvious to “include a third multiplexer for simultaneously discharging the pixel signals held in the capacitors to better control the various signal lines coming in” to both cure the deficiencies in the teachings of ‘652 and ‘841, and to provide motivation for modifying the teachings of ‘652 and ‘841 to make the combination recited in claim 1-3 and 5-8. The Examiner cites a number of references including U.S. Patents No. 6,847,346 to Kumagai et al., No. 5,892,493 to Enami et al., No. 6,337,729 to Ha, No. 5,361,081 to Barnaby, and No. 634,865 to Peterson in support of the conclusion that providing a multiplexer on the output is common or well known. However neither ‘652, ‘841 nor the references cited by the Examiner as evidentiary support for taking Official Notice teach, suggest, or provide evidentiary support for using a multiplexer for

“simultaneously discharging the pixel signals held in the capacitors to the corresponding data lines through the output buffer part” or teach, suggest, or provide evidentiary support for the proposition that arranging the multiplexer as recited in claim 1 would “better control the various signal lines coming in.” Accordingly, Applicants respectfully repeat the traversal of the Official Notice taken by the Examiner, and request that the Examiner provide evidentiary support for the allegations of which the Examiner takes Official Notice or alternatively that the Examiner withdraw the rejection to claim 1-3 and 5-8.

Claims 30 and 31 recite a data driving method for a liquid crystal display device having a combination of features including “sampling and holding first inputted pixel signals through a first part of the output channels and holding second inputted pixel signals from a second part of the output channels during a first horizontal period, and simultaneously supplying the first and second held pixel signals corresponding data lines during a second horizontal period.”

In rejecting claim 30 and 31, the Examiner acknowledges that ‘652 does not teach “a sampling and holding section.” The Examiner cites ‘841 as allegedly curing the deficiencies in the teaching of ‘652. Applicants submit that ‘652 does not teach a sampling and holding section performing “sampling and holding first inputted pixel signals through a first part of the output channels and holding second inputted pixel signals from a second part of the output channels during a first horizontal period, and simultaneously supplying the first and second held pixel signals corresponding data lines during a second horizontal period” as recited in claims 30 and 31. Applicants submit that ‘652 and ‘841, analyzed singly or in combination, do not teach at least the above-identified combination of features recited in claims 30 and 31. Accordingly, Applicants submit that claims 30 and 31 are allowable over ‘652 and ‘841.

Claims 9-12, 14-29, 32 and 34-47 are rejected under 35 U.S.C. § 103(a) as being unpatentable over ‘652 in view of ‘841 and U.S. Patent No. 6,661,402 to Nitta et al. (hereinafter “Nitta”).

Claim 9 recites a data driving apparatus for a liquid crystal display device having a combination of features including “a discharging part discharging the pixel signals held in the holding part for a first period to the corresponding data lines through the different polarity paths for a second period.” Applicants submit that ‘652, ‘841 and Nitta, analyzed singly or in any combination, do not each at least the above-identified combination of elements recited in claim 9.

In the Office Action, the Examiner acknowledges that '652 does not teach a "sampling and holding section."

The Examiner cites '841 to cure deficiencies in the teachings of '652 with respect to a sampling and holding section. In particular, the Examiner cites '841 as teaching a sampling and holding section including a storage capacitor with "the purpose of the storage capacitors to control light of each pixel by charging and discharging." Applicants submit that even assuming the Examiner's conclusion concerning the teachings of '841 is correct, '841 does not teach or suggest "discharging the pixel signals held in the holding part for a first period to the corresponding data lines through the different polarity paths for a second period."

To cure deficiencies in the teachings of '652 and '841 the Examiner cites Nitta as teaching "components of the driving apparatus having selected polarity via positive and negative output channels." Applicants do not reach the conclusions of the Examiner concerning the teachings of Nitta. Applicants submit that Nitta does not cure the deficiencies in the teachings of '841 and '652 regarding "discharging the pixel signals held in the holding part for a first period to the corresponding data lines through the different polarity paths for a second period" as recited in claim 9. Applicants respectfully submit that '652, '841, and Nitta, analyzed singly or in combination, do not teach at least the above-identified combination of elements recited in claim 9. Accordingly, Applicants respectfully submit that claim 9 and claims 10-12 and 14-29 depending from claim 9 are allowable over '652, '841, and Nitta.

With respect to claims 32 and 34, Applicants first note that claims 32 and 34 depend from claim 30 and each include by reference all of the elements recited by claim 30.

As Applicants have presented above, '652 and '841 do not teach or suggest all of the features of claim 30. The Examiner in rejecting claim 32 cites Nitta as teaching elements explicitly recited in claim 32. Applicants do not reach the Examiner's conclusion with respect to the teachings of Nitta. Applicants submit that Nitta does not cure the deficiencies in '652 and '841 with respect to claim 30. Applicants respectfully submit that '652 and '841 and Nitta, analyzed singly or in combination, do not teach or suggest at least "sampling and holding first inputted pixel signals through a first part of the output channels and holding second inputted pixel signals from a second part of the output channels during a first horizontal period, and simultaneously supplying the first and second held pixel signals corresponding data lines during a second horizontal period," as recited in claim 30. Accordingly, Applicants respectfully submit

that claim 30 and claims 32 and 34 depending from claim 30 are each allowable over '652, '841, and Nitta.

Claims 35-47 recites a data driving method for a liquid crystal display device having a combination of features including "sampling and holding the time-divided analog pixel signals to output channels having the selected polarity during a first horizontal period; and outputting the held pixel signals to corresponding data lines for a next horizontal period subsequent to the first horizontal period." Applicants submit that none of the cited references including '652, '841, or Nitta teach "sampling and holding ... during a first horizontal period" and "outputting the held pixel signals ... for a next horizontal period subsequent to the first horizontal period." Applicants respectfully submit that '652, '841, and Nitta, analyzed separately or in any combination, do not teach or suggest the above identified combination of elements recited in claims 35-47. Accordingly, Applicants respectfully submit that claims 35-47 are allowable over '652, '841, and Nitta.


Applicants believe the foregoing amendments and remarks place the application in condition for allowance and early, favorable action is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at (202) 496-7500 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. § 1.136, and any additional fees required under 37 C.F.R. § 1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. *A duplicate copy of this sheet is enclosed.*

Respectfully submitted,

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